

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-14. (Canceled)

15. (Currently Amended): A thermostable mutant polymerase comprising a Y-GG/A amino acid motif between an N-terminal 3'-5' exonuclease domain and a C-terminal polymerase domain wherein the tyrosine of the Y-GG/A amino acid motif is substituted with another amino acid, and wherein the difference between the mutant polymerase and SEQ ID NO:34 consists of the single amino acid substitution of the tyrosine of the Y-GG/A amino acid motif ~~the mutant polymerase has at least 80 % amino acid homology to SEQ ID NO:34.~~

16-19. (Canceled).

20. (Previously Presented): The mutant polymerase of Claim 15 wherein the tyrosine of the Y-GG/A amino acid motif is substituted with an amino acid with an aromatic side chain.

21. (Previously Presented): The mutant polymerase of Claim 20 wherein the tyrosine of the Y-GG/A amino acid motif is substituted with a phenylalanine, a tryptophan or a histidine.

22. (Previously Presented) The mutant polymerase of Claim 15 wherein the tyrosine of the Y-GG/A amino acid motif is substituted with an amino acid with a hydrophilic side chain.

23. (Previously Presented) The mutant polymerase of Claim 22 wherein the tyrosine of the Y-GG/A amino acid motif is substituted with an asparagine.

24. (Previously Presented): A DNA encoding the mutant polymerase of Claim 15.

25. (Previously Presented): A vector comprising the DNA of Claim 24.

26. (Previously Presented) An isolated host cell comprising the DNA of Claim 24 or the vector of Claim 25.

27. (Previously Presented) A process for obtaining a mutant polymerase comprising

purifying the mutant polymerase from the isolated host cell of Claim 26.

28. (Previously Presented): A process for synthesizing nucleic acids, comprising contacting the mutant polymerase of Claim 15 with nucleotides, a primer and a polynucleotide template under conditions suitable for elongation of the primer.

29. (Previously Presented): A process for polynucleotide amplification comprising contacting the mutant polymerase of Claim 15 with nucleotides, primers and a polynucleotide template under conditions suitable for amplification of the polynucleotide.

30. (Previously Presented) The mutant polymerase of Claim 21 wherein the tyrosine of the Y-GG/A amino acid motif is substituted with a tryptophan or a histidine.

31. (Previously Presented) The mutant polymerase of Claim 22 wherein the tyrosine of the Y-GG/A amino acid motif is substituted with a serine.

32. (Previously Presented) A polymerase chain reaction process comprising contacting the mutant polymerase of Claim 15 with nucleotides, a primer and a polynucleotide template under conditions suitable for amplification of the polynucleotide template.

33-34. (Canceled)